

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A supported chromium catalyst comprising:
chromium oxide,
a silica-containing support comprising silica ~~selected from the group consisting of silica having: (a) a pore volume of about 1.1 to about 1.8 cm³/g and a surface area of about 245 to about 375 m²/g, (b) having a pore volume of about 2.4 to about 3.7 cm³/g and a surface area of about 410 to about 620 m²/g, and (c) a pore volume of about 0.9 to about 1.4 cm³/g and a surface area of about 390 to about 590 m²/g;~~
and,
an organoaluminum compound;
wherein said supported chromium catalyst is activated at about 400 to about 860°C.
2. (Original) The catalyst of claim 1 wherein said organoaluminum compound is added in situ.
3. (Original) The catalyst of claim 1 wherein said organoaluminum compound is an alkyl aluminum alkoxide compound.
4. (Original) The catalyst of claim 3 wherein said alkyl aluminum alkoxide compound is diethyl aluminum ethoxide.
5. (Original) The catalyst of claim 3 formed by the in-situ addition of said alkyl aluminum alkoxide compound.

6. (Original) The catalyst of claim 5 wherein said alkyl aluminum alkoxide compound is diethyl aluminum ethoxide.
7. (Original) The supported catalyst of claim 1 wherein said supported chromium catalyst is activated at about 600 to about 860°C.
8. (Original) The catalyst of claim 1 further comprising titanium tetraisopropoxide.
9. (Original) The catalyst of claim 1 wherein said organoaluminum compound is an alkyl aluminum compound.
10. (Original) The catalyst of claim 9 wherein said alkyl aluminum compound is selected from the group consisting of triethyl aluminum, tri-isobutyl aluminum, and tri-n-hexyl aluminum.
11. (Original) The catalyst of claim 9 formed by the in situ addition of said alkyl aluminum compound.
12. (Original) The catalyst of claim 11 wherein said alkyl aluminum compound is triethyl aluminum.
13. (Original) The catalyst of claim 1 wherein said silica has a pore volume of about 2.4 to about 3.7 cm³/g and a surface area of about 410 to about 620 m²/g and said organoaluminum compound is an alkyl aluminum alkoxide compound.
- 14-21. (Cancelled)
22. (Withdrawn) A process for producing an ethylene polymer comprising the steps of:
contacting ethylene under polymerization conditions with a catalyst system, said catalyst system comprising chromium oxide, an alkyl aluminum, and a silica-containing support comprising silica selected from the group consisting of silica having: (a)

a pore volume of about 1.1 to about 1.8 cm³/g and a surface area of about 245 to about 375 m²/g, (b) a pore volume of about 2.4 to about 3.7 cm³/g and a surface area of about 410 to about 620 m²/g, and (c) a pore volume of about 0.9 to about 1.4 cm³/g and a surface area of about 390 to about 590 m²/g;

and,

controlling one or more of catalyst activity, polymer side chain branching, polymer M_z/M_w , polymer M_w/M_n , polymer density and polymer molecular weight of the resulting ethylene polymer by the addition of alkyl aluminum alkoxide in an amount to effect a final ratio of equivalents of aluminum to equivalents of chromium of from about 0.1:1 to about 10:1.

23. (Withdrawn) The process of claim 22 wherein said alkyl aluminum is triethyl aluminum, tri-isobutyl aluminum, or tri-n-hexyl aluminum.
24. (Withdrawn) The process of claim 22 wherein said alkyl aluminum alkoxide is diethyl aluminum ethoxide.
25. (Withdrawn) The process of claim 22, wherein said catalyst system further comprises titanium tetraisopropoxide.
26. (Withdrawn) The process of claim 22 wherein said polymerization is gas phase polymerization.
27. (Withdrawn) The process of claim 24 wherein said addition of diethyl aluminum ethoxide comprises in situ addition.
28. (Withdrawn) The process of claim 24 wherein said addition of diethyl aluminum ethoxide comprises addition directly to the catalyst during catalyst preparation.
29. (Withdrawn) The process of claim 22 wherein the polymer M_w/M_n is greater than or equal to 16 and the polymer M_z/M_w is greater than or equal to 6.

30-44. (Cancelled)

45. (Withdrawn) A process for producing an ethylene polymer comprising the steps of:
contacting ethylene under polymerization conditions with a catalyst system comprising chromium oxide and a silica-containing support comprising silica selected from the group consisting of silica having: (a) a pore volume of about 1.1 to about 1.8 cm³/g and a surface area of about 245 to about 375 m²/g, (b) a pore volume of about 2.4 to about 3.7 cm³/g and a surface area of about 410 to about 620 m²/g, and (c) a pore volume of about 0.9 to about 1.4 cm³/g and a surface area of about 390 to about 590 m²/g;
controlling catalyst activity, polymer M_w/M_n, and polymer molecular weight of the resulting ethylene polymer by the addition of a co-catalyst in an amount to effect a final ratio of equivalents of aluminum to equivalents of chromium of from about 0.1:1 to about 10:1.
46. (Withdrawn) The process of claim 45 wherein the co-catalyst is selected from the group consisting of triethyl aluminum, tri-isobutyl aluminum, and tri-n-hexyl aluminum.
47. (Withdrawn) The process of claim 45 wherein the ratio of equivalents of aluminum to equivalents of chromium is from about 1:1 to about 3:1.
48. (Withdrawn) The process of claim 45 wherein said polymerization is gas phase polymerization.

49-56. (Cancelled)